20. (Amended) The transgenic mouse according to Claim 1, wherein Flp recombinase activity is further regulated by a factor selected from the group consisting of chemical, developmental stage and temperature.

F2

Sub G1

51. (Twice Amended) The transgenic mouse according to claim 15, wherein said another transgene is a gene controlling differentiation of a cell or development of an organism selected from the group consisting of genes encoding adhesion molecules, cyclin kinase inhibitors, Wnt family members, Pax family members, Winged helix family members, Hox family members, cytokines, interleukins, growth/differentiation factors and their receptors, kinases, phosphatases, metabolic enzymes, and antigen receptors.

F3

Sub G2

52. (Amended) A transgenic mouse comprising a Flp recombinase transgene intergrated into the genome of the transgenic mouse, wherein the Flp recombinase transgene is expressed from a tissue specific or a developmental stage specific promoter in at least one cell of the transgenic mouse at a level sufficient to catalyze recombination between two FLP-recognition sequences in direct repeat orientation in said cell, wherein said recombination is detected by activation of a gene expressed from a ubiquitous promoter, wherein said gene produces a detectable product only when in recombined form.

F4

55. (Amended) The transgenic mouse of claim 52, wherein said detectable product is a histochemical marker encoded by said gene selected from the group consisting of alkaline phosphatase, β-galactosidase, chloramphenicol acetyltransferase, luciferase, green fluorescent protein and β-glucuronidase.

56. (Amended) The transgenic mouse of claim 52, wherein said detectable product is a transcript expressed from said gene in recombined form that is detectable by *in situ* hybridization.

57. (Amended) The transgenic mouse of claim 52, wherein said detectable product is a peptide tag encoded by said gene that is detectable by binding to a cognate binder.

59. (Amended) A method of mapping the developmental fate of a cell *in vivo* comprising:

(a) providing a transgenic mouse comprising a genome which contains a Flp recombinase transgene under control of a tissue-specific or developmental stage specific promoter and at least two FLP recognition sequences in direct orientation;

(b) expressing the Flp recombinase transgene at a level sufficient to catalyze site-specific recombination between said FLP recognition sequences in at least one cell; and

Sub G3 F6

(c) detecting said recombination in said at least one cell by detecting activation of a gene expressed from a ubiquitous promoter, wherein said gene produces a detectable product only when in recombined form, and wherein said recombination is evidence of expression of said Flp transgene in said cell or a developmental precursor to said cell.

62. (Amended) The method of claim 59, wherein said detectable product is a histochemical marker encoded by said gene selected from the group consisting of alkaline phosphatase, β-galactosidase, chloramphenicol acetyltransferase, luciferase, green fluorescent protein and β-glucuronidase.

F7

63. (Amended) The method of claim 59, wherein said detectable product is a transcript expressed from said gene in recombined form that is detectable by *in situ* hybridization.

64. (Amended) The method of claim 59, wherein said detectable product is a peptide tag encoded by said gene that is detectable by binding to a cognate binder.